

ACROSS THE POND

A Quarterly Update on Joint UK NDA/US DOE Activities and Initiatives

Issue 1: Summer 2009



U.S. DEPARTMENT OF
ENERGY

NDA

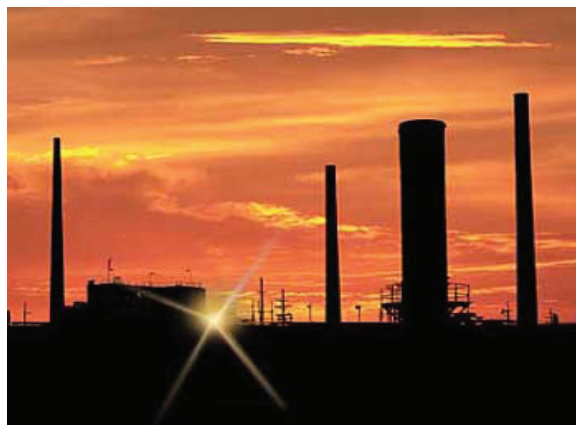
Nuclear
Decommissioning
Authority

The US Department of Energy (DOE) / UK Nuclear Decommissioning Authority (NDA) Bilateral Agreement

The US DOE (Department of Energy) and the UK NDA (Nuclear Decommissioning Authority) signed an agreement in March 2007 in which both parties agreed that there was mutual benefit in working together and sharing information in the development and application of technologies and approaches to pressing needs in a number of areas including environmental remediation, radioactive waste management and decommissioning & deactivation (D&D). Since then there have been a number of 'Information Exchange' activities between the parties discussing a wide range of topics which have assisted both parties in their approach to priority challenges.

Initial Topic Areas for Discussion

On the 9th and 10th February 2009, a two day bilateral discussion was held between representatives of US DOE and Department Heads, Principal Investigators and Program Managers



Sunset over Savannah River Site

from the NDA and the UK National Nuclear Laboratory (NNL). The discussions identified a number of topics where collaboration was considered to be beneficial and then these were prioritized to a smaller number as listed in the chart below. These topic areas are being developed further through conference calls and information exchange workshops in an effort to identify joint program opportunities for the future.

There is also a growing appreciation that, with increased pressure on both budgets and on completing the cleanup mission as quickly and cost-effectively as possible, there is significant benefit to be gained from collaboration in focused Technology Development & Deployment (TDD), efforts between the parties. The bilateral agreement is one vehicle through which

these joint efforts are being discussed, developed and implemented.

Mark Gilberston, Deputy Assistant Secretary for Engineering and Technology, Office of Environmental Management (EM) said

"The Department of Energy's Office of Environmental Management is collaborating with the best technical experts from around the world to solve our problems by reducing risk and accelerating cleanup with new technologies and methodologies. These international collaborations have resulted in significant benefits to the EM cleanup program, and potential exists for even greater impact in years to come. Because the DOE and the United Kingdom have collaborated to solve unique DOE problems for several years, many solutions have already been developed using innovative technology and new problems are being investigated. By working together in the field of nuclear cleanup, our nations can help ensure mutual benefit, as well as a safe and secure future. And, as leaders in the field of energy research and development I believe our partnership can have a benefit to global developments in the areas of energy security and climate change."

	Topic	DOE Point of Contact	NDA Point of Contact
1	ANSTO Hot Isostatic Pressing	Steven Ross	Graham Jonsson
2	Ion Exchange transportation, packaging and disposal	Christine Gelles	Graham Jonsson
3	D&D in confined spaces and decommissioning hierarchy issues	Andy Szilagyi / Yvette Collazo	John Inkester / Melanie Brownridge
4	Glass chemistry	Kurt Gerdes	Graham Jonsson / Marcus Amme
5	Tank corrosion monitoring and structural integrity issues	John Shultz	John Inkester
6	Fuel drying	Al Baione	Paul Gilchrist

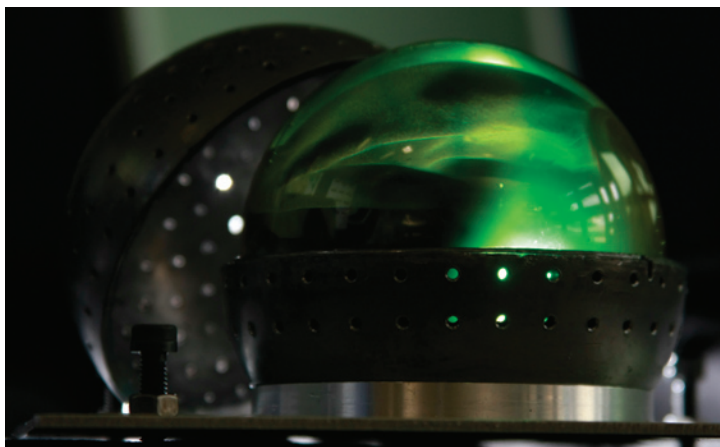
Richard Waite, Acting CEO, NDA said "The NDA works with a number of organizations in other countries with remits similar to our own. These collaborations allow us to make effective use of international experience through sharing lessons learned, which in turn means we don't reinvent wheels. We particularly value our relationship with the US Department of Energy as they face many technical challenges similar to our own and where working together means we can jointly focus our efforts and deliver better value for money for both organizations. We have aligned our respective experts and positively encourage them to exchange information and develop ideas for joint projects.

I am pleased to say the relationship is working exceedingly well which express the natural strategic partnership that we have with each other, and we are both benefiting greatly as the articles in this newsletter demonstrate."

US DOE Represented at NDA-Sponsored Pu Workshop

At the request of Andy Szilagyi and Yvette Collazo from the DOE's Office of D&D and Facility Engineering Ian Seed from Cogentus attended the workshop entitled "Plutonium Decommissioning Good Practice Workshop III, Moving forward with Good Practice" which was held on 6th and 7th May 2009 at the Hilton Manchester Airport Hotel. The objective of Ian's attendance was to identify technologies and approaches in use in the UK which could support current EM tasks on D&D of facilities contaminated with Pu-238. Whilst this particular isotope of Pu does not appear to be as big an issue in the UK as it is in the US, a number of key contacts with Government and industry were made which may be developed in the future through direct interactions with DOE. The workshop day comprised a series

of presentations on topic areas, covering Contamination Control (ventilation standards, contamination control at Atomic Weapons Establishment (AWE), measuring high levels of in cell surface & airborne alpha contamination, monitoring for plutonium in various operational environments), Dosimetry, and Personal Protective Equipment (PPE) (particularly air fed suits)



RadBall: radiation sensitive polymer inner core and collimation sheath

DOE – NDA Implementation Plan (4th Standing Committee Meeting held in Phoenix)

The 4th Standing Committee Meeting under the bilateral agreement between UK NDA and US DOE was held at the Waste Management Conference in Phoenix, March 3, 2009. Attendees from DOE included Dae Chung, Deputy Assistant Secretary (DAS) for Management and Operations; Jack Craig, Director, Consolidated Business Center; Mark Gilbertson DAS, Office of Engineering and Technology; Ana M. Han, Lead Foreign Affairs Specialist, EM; and Kurt Gerdes, Technical Assistance Manager, Office of Waste Processing, EM as well as from the NDA John Mathieson, Head of International Relations; Steve Barlow, Head of Assessments; Ron Gorham, Head of Supply Chain and Ian Hudson, Director, Sellafield. A wide range of collaborative topics were discussed including fuel

drying, site remediation, D&D, human capital management and performance monitoring. Forward action plans were discussed and agreed along with the date and location of the next meeting which was tentatively set for mid October during the ICEM conference in Liverpool.

SRNL and NNL Collaborate on RadBall Trials

The UK National Nuclear Laboratory (NNL) has developed a remote, non-electrical, radiation-mapping device,



Dr Steven Stanley, RadBall Inventor

known as RadBall, which offers a means to locate, quantify and characterize

radiation hazards and sources within small, contaminated areas of nuclear facilities. Typical environments in which RadBall would be useful are glove boxes, active cells, confined or hard to reach parts of plant as well as areas of plant where elevated radiation levels exist.

It is envisaged that the RadBall technology can be deployed to ensure that the safest and most cost effective decontamination strategies can be determined and executed.

The RadBall, designed by Dr Steven Stanley, is based on technology used for radiation therapy delivery in the medical industry. The device consists of a spherical, radiation sensitive polymer plastic core (about the size of a tennis ball) which sits inside a thin tungsten collimation sheath pierced with over 100 collimation holes.

With the device deployed in a radioactive environment, the collimation sheath partially attenuates radiation which would otherwise be incident on the inner core whilst allowing radiation to pass through the collimation holes. On manufacture the inner core is transparent; however, on exposure to radiation the material exhibits an increase in opacity and dark green lines are formed in the polymer. These radiation opacity tracks within the inner core provide the information required to locate, quantify and characterise the radiation sources. After the RadBall has been retrieved from the radiation environment it is scanned in an optical tomography system. The scanner sends light through the ball and measures the light intensity on the other side of the ball to give a 2D image. Rotating the device during the scanning process produces a digitised opacity based three dimensional visualization of the inner core. This data can then be interpreted to produce two radiation maps. The first

represents the location and intensity of the incident radiation whilst the second represents the location and characteristic energy of the incident radiation (potentially identifying different types of radioactive contamination). These two maps can then be overlaid onto a representation of the glovebox, active cell or confined space geometry to provide a full surface radiation map of the domain of interest.

To date, the RadBall has been deployed in a number of technology trials in nuclear waste reprocessing plants at Sellafield in the UK. The trials have demonstrated the successful ability of the RadBall technology to be deployed and retrieved from active areas. Analysis of the irradiated RadBall has also demonstrated its ability to locate radiation sources. The positive results from these initial deployment trials and the anticipated future potential of RadBall have led to the NNL partnering with the Savannah River National Laboratory (SRNL) in the USA to further underpin and strengthen the technical performance of the technology. The proposed programme of work with SRNL will involve a number of RadBalls being irradiated in Savannah River facilities with analysis of scanning data conducted by the NNL. The successful outcome of the NNL/SRNL partnership will enable the NNL to progress plans to fully commercialize the RadBall technology and make it available to UK and international customers in the future.

For further details please email:
Dr Steven Stanley
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NDA Provides Support to EM in Prioritization of D&D Technology Needs

John Inkester, Head of Engineering Strategy for the NDA, participated in a 5 day workshop along with 20 senior staff

from 5 DOE sites, to identify and prioritize D&D technology needs across the DOE complex. The opportunity to network as well as share knowledge and experience was extremely beneficial to all participants and confirmed that there is considerable overlap between both countries' challenges and needs. John said it was "an excellent meeting that incorporated learning concerning research needs, networking and prioritisation. It was evident that the D&D programs for US DOE and UK NDA have much in common."

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Breakout session discussing D&D prioritization

DOE and NRC Criticality Team visit Sellafield

Earlier this year a team from DOE and the Nuclear Regulatory Commission (NRC) visited their counterparts at Sellafield to discuss the UK's approach to criticality safety. Adolf Garcia, Senior Nuclear Criticality Safety Specialist from Idaho Operations Office of DOE said the purpose of the technical exchange was related to the Advanced Fuel Cycle Initiative (AFCI) in respect of criticality safety; specifically to help acquaint NRC staff with criticality controls in an operating reprocessing plant which it was not possible to do in the US. The visit provided NRC staff with insights concerning criticality safety

issues that may need to be addressed as part of their ongoing efforts to develop the regulatory framework for recycling facilities in the US. A number of workshops were held with UK colleagues and plant visits organized around the Sellafield complex. Fiona Ogilvie, Sellafield's Criticality Team Manager said "the visit was a great success and allowed DOE and NRC staff to observe operations at Sellafield and our approach to criticality safety." Adolf Garcia said "Our experiences in the UK will significantly assist the NRC in developing the necessary regulatory infrastructure for future Spent Nuclear Fuel (SNF) reprocessing facilities in the United States, and provide DOE with insights regarding their licensability."

NDA Nucleargraduates Program Participant Seconded to DOE

Nucleargraduates is a new programme operated by the NDA which is designed to give graduates active experience in all parts of the nuclear industry. Throughout the two year program, graduates complete four secondments with the NDA, a Site License Company (SLC), a Supply Chain company and at an international location. Jennifer Li joined the Nucleargraduates Programme in April 2008 and after completing secondments with the NDA, and Magnox North at their Hunterston A Site she has recently started her 6 month international secondment with the DOE in the Office of Nuclear Energy in Washington DC. Jennifer is currently involved in a number of projects focusing on nuclear energy expansion and is beginning to build a network of contacts within DOE that she hopes can help facilitate NDA/DOE cooperation in the future.

To learn more about the nucleargraduates programme please visit www.nucleargraduates.com and hear about what the graduates are doing day to day.



Nuclear remediation main sites covered under the bilateral agreement



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